

**DECISION DOCUMENT FOR THE PARTIAL APPROVAL OF OHIO'S
SUBMISSION OF THE STATE'S INTEGRATED REPORT WITH RESPECT
TO SECTION 303(d) OF THE CLEAN WATER ACT (CATEGORY 5
WATERS)**

The U.S. Environmental Protection Agency has conducted a complete review of Ohio's 2014 Section 303(d) list and supporting documentation and information. Based upon this review, EPA has determined that Ohio's list of assessment units (AUs) still requiring total maximum daily loads (TMDLs) partially meets the requirements of Section 303(d) of the Clean Water Act (CWA or "the Act"), and EPA's implementing regulations, and hereby partially approves Ohio's list. Ohio's list of AUs still requiring TMDLs appears in Category 5 of the Ohio 2014 Integrated Water Quality Monitoring and Assessment Report (2014 Integrated Report or 2014 IR), and EPA's partial approval extends only to the AUs in Category 5 of the 2014 Integrated Report. The statutory and regulatory requirements, and EPA's review of Ohio's compliance with each requirement, are described in detail below.

EPA approves the new listing of the shoreline of Lake Erie for Public Drinking Water Supply (PDWS) designated use impairment due to excess microcystin. EPA, however, is deferring its final decision on whether the waters beyond the shoreline AU of the Western Lake Erie Basin (WLEB) should be on Ohio's Section 303(d) list for impairment of the PDWS designated use due to microcystin. Sampling results from water intakes for Toledo and Oregon, which are located beyond the shoreline AU of the WLEB, exceed Ohio's microcystin threshold. Ohio's Section 303(d) list includes the shoreline of the WLEB for the PDWS designated use, but does not include the waters beyond the shoreline AU where the Toledo and Oregon intakes are located. EPA's deferral is limited to the assessment status of microcystin impacts to the PDWS use in the waters beyond the shoreline AU of the WLEB. EPA's deferral is due to proposed additions to Ohio's Lake Erie AUs that would expand coverage to all drinking water intakes in the WLEB for the next listing cycle.

I. Statutory and Regulatory Background

Identification of Water Quality Limited Segments (WQLSs) for Inclusion on Section 303(d) List

Section 303(d)(1) of the Act directs states to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA's implementing regulations require states to submit biennially a list identifying water quality limited segments still requiring a Total Maximum Daily Load (TMDL) (40 C.F.R. § 130.7(b)(1)). EPA regulations provide that states do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology-based effluent limitations required by the Act; (2) more stringent effluent limitations required by state or local authority; and (3) other pollution control requirements required by state, local, or federal authority (40 C.F.R. §130.7(b)(1)).

Consideration of Existing and Readily Available Water Quality-Related Data and Information

In developing Section 303(d) lists, states are required to assemble and evaluate all existing and readily available water quality-related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of water: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the state's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive models indicate nonattainment of applicable standards; (3) waters for which water quality problems have been reported by government agencies, members of the public, or academic institutions; and (4) waters identified by the state as impaired or threatened in a nonpoint assessment submitted to EPA under Section 319 of the Act. (40 C.F.R. §130.7(b)(5)) In addition to these minimum categories, states are required to consider any other data and information that is existing and readily available. EPA's 1991 Guidance for Water Quality-Based Decisions (1991 Guidance), describes categories of water quality-related data and information that may be existing and readily available. While states are required to evaluate all existing and readily available water quality-related data and information, states may, subject to EPA approval, decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring states to assemble and evaluate all existing and readily available water quality-related data and information, EPA regulations require states to include, as part of their submissions to EPA, documentation to support decisions to list or not list waters. Such documentation must include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; (3) a rationale for any decision to not use any existing and readily available data and information; and (4) any other reasonable information required by the Region (40 C.F.R. §130.7(b)(6)).

Priority Ranking

EPA regulations also require states to establish a priority ranking for listed waters. In prioritizing and targeting waters, states must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters and shall identify the pollutants causing or expected to cause violations of the applicable water quality standards. The priority ranking must specifically include the identification of waters targeted for TMDL development in the next two years (40 C.F.R. §130.7(b)(4)). States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic and aesthetic importance of particular waters, degree of public interest and support, and state or national policies and priorities (57 Fed. Reg. 33040, 33045 (July 24, 1992) and EPA's 1991 Guidance).

Identification of Waters and Consideration of Existing and Readily Available Water Quality-Related Data and Information

The Ohio 303(d) list of prioritized impaired waters (i.e., Category 5 of the 2014 Integrated Report) is contained in Section L4 of the 2014 Integrated Report, and is in compliance with Section 303(d) of the Act and 40 C.F.R. §130.7. EPA has reviewed Ohio's description of the data and information it considered, its methodology for identifying waters, and considered any other relevant information including information the State submitted to EPA in response to requests for additional information.

Ohio's Lake Erie assessment included drinking water use, and Ohio assembled and evaluated microcystin data from drinking water intakes within the shoreline AUs and further from the shoreline AU of the WLEB, including intakes for Toledo and Oregon. Though EPA concludes that the State of Ohio properly assembled and evaluated all existing and readily available data and information relating to the categories of waters specified in 40 C.F.R. §130.7(b)(5), EPA is deferring its final decision on Ohio's decision not to include the waters beyond the shoreline AU of the WLEB on its 2014 Section 303(d) list for the PDWS designated use. EPA's deferral is due to proposed additions to Ohio's Lake Erie AUs that would expand coverage to all drinking water intakes in the WLEB for the next listing cycle. EPA is only deferring action on assessment determinations related to microcystin impacts to the PDWS use for the open waters of the WLEB. As detailed later in this document, EPA is working with Ohio EPA to ensure that any waters impaired for the PDWS use within the three new proposed AUs for the WLEB (i.e., shoreline, nearshore, and offshore) are included on the State's future 303(d) lists.

EPA has also determined that the State properly listed waters with nonpoint sources causing or expected to cause impairment, consistent with Section 303(d) of the Act and EPA guidance. Section 303(d) lists are to include all water quality limited segments (WQLSs) still needing TMDLs, regardless of whether the source of the impairment is a point and/or nonpoint source.

EPA's long-standing interpretation is that Section 303(d) applies to waters impacted by point and/or nonpoint sources.¹

Ohio has provided its rationale for not relying on particular existing and readily available water quality-related data and information that it has evaluated as the basis for listing waters. Specifically, in 2003, Ohio passed a credible data law, in the Ohio Revised Code (ORC) 6111.50 to 6111.56, that establishes requirements for the use of external data. That law requires the Director of Ohio EPA to adopt rules that would, among other things, require that data be collected by a qualified data collector and be compliant with the specifications of "Level 3 credible data," in order to be used for listing waters under Section 303(d). Those rules, effective March 24, 2006, are located at Chapter 3745-4 of the Ohio Administrative Code (OAC). Within Section D5 of the 2014 Integrated Report is the memorandum dated May 23, 2013, sent by Ohio to solicit Level 3 data from external sources and all Level 3 Qualified Data Collectors (QDC). External sources include State and County health departments, universities, U.S. Geological Survey, Northeast Ohio Regional Sewer District (NEORS), permittees, compliance databases, and atrazine registrants. The data collectors either received intensive training and certification from Ohio EPA to become QDC, or the entities have submitted data in the past. EPA concludes Ohio has provided a reasonable basis for not relying on data that do not meet the aforementioned criteria for assessment purposes.

As part of its ongoing monitoring and assessment program, the State developed a five-year rotating basin plan that divides the State into 25 areas, each comprised of a group of subbasins within major river basins. Ohio EPA estimates that under the current funding levels monitoring takes more than 10 years to complete throughout the State. After the State completes the monitoring in one of the assessment areas, it collects the data and assesses the biological, chemical, and physical condition of the AU.

The Ohio River data collection is through the Ohio River Valley Water Sanitation Commission (ORSANCO). ORSANCO was established in 1948 and operates programs to improve water quality (through wastewater discharge standards, biological assessments, monitoring chemical and physical properties), coordinates emergency response for spills or accidental discharges, and promotes public participation in volunteer programs. Ohio defers to ORSANCO's analysis and listing of impaired Ohio River segments, as discussed in greater detail later in this document.

1 See Pronsolino v. Nastri, 291 F. 3d 1123, 1131 (9th Cir. 2002); see also EPA's 1991 Guidance; and National Clarifying Guidance for 1998 Section 303(d) Lists, August 27, 1997.

II. Analysis of Ohio's Submission

Listing Methodology and Reporting

EPA issued guidance for integrating the development and submission of Section 305(b) water quality reports and Section 303(d) lists of impaired waters (EPA's 2002 Integrated Water Quality Monitoring and Assessment Report Guidance, November 19, 2001) (2001 Guidance). The 2001 Guidance was superseded by EPA's Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act, July 21, 2003 (2003 Guidance). The 2003 Guidance recommends that states develop an integrated report of the quality of their waters by placing all waters into one of five assessment categories. On August 12, 2005, the 2006 Integrated Report Guidance (2006 IRG) became available. A memorandum dated October 12, 2006, from the Office of Wetlands, Oceans, and Watersheds, encouraged states and EPA regional offices to follow the 2006 IRG in preparing and reviewing the 2008 Section 303(d) lists. In addition to the 2006 IRG, EPA has issued supplemental memoranda and guidance including: i) a memorandum dated May 5, 2009; ii) *Information Concerning 2012 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions*, dated March 21, 2011; and iii) *Information Concerning 2014 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions*, dated September 3, 2013. These memoranda and guidance were available for the preparation and review of Ohio's 2014 Integrated Report.

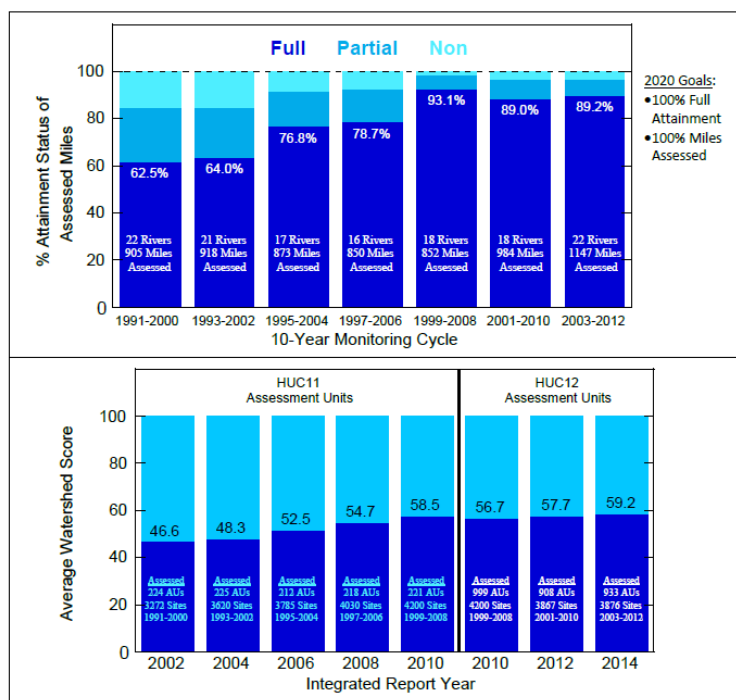
The waterbodies in Category 5, at Section L4 of Ohio's 2014 IR, constitute Ohio's Section 303(d) list. Ohio's 2014 IR discusses several issues that impact Ohio's assessment program. Details are found within Ohio's 2014 IR, and several changes to Ohio's assessment program for the 2014 listing cycle are highlighted and discussed below. The most significant overall additions and enhancements to the 2014 IR include the listing of the shoreline AU of the WLEB for the PDWS designated use based on microcystin data. The listing methodology for the PDWS designated use includes the assessment of a new core indicator based on algae and cyanotoxins in the shoreline AUs in Lake Erie. The 2014 IR also includes a section on Lake Erie monitoring and assessment, and an expanded wetlands discussion. Several sections of the 2014 IR are not discussed in this document because there was no significant departure from past monitoring and assessment practices.

Section A of the 2014 IR: An Overview of Water Quality in Ohio. This Section assesses the changes in status of Ohio's waters since the last listing, including progress toward overall goals. One of the goals of Ohio's surface water program is to assess all large rivers (23 rivers in 38 AUs) and have those waters attain applicable water quality goals by 2020. The most recent ten year interval can be readily compared with the 2012 IR (for 18 large rivers). The top figure below represents the attainment status of the large rivers. A total of 89.2% of the assessed miles of large rivers are in full attainment, which is very similar to the last reporting cycle and

represents all data for all rivers from 2003-2012.

The bottom figure below represents the overall percentages of the watershed AUs (WAUs), found on page A-6, Section A of Ohio's 2014 IR submittal. A total of 59.2% of the 933 assessed AUs are in full attainment, a similar value compared to the last listing cycle (3,876 sites). These assessments are further discussed and compared in the Section G review later in this document.

Summary information on the individual AUs is available at: <http://wwwapp.epa.ohio.gov/gis/mapportal/IR2014.html>



(Graphs from page A-6, Section A of Ohio's 2014 IR)

The major causes of impairment are organic enrichment/low dissolved oxygen (OE/DO), hydromodification, habitat modification, nutrients, and siltation/sediment. The figure below shows that prevalence of OE/DO impairment in both watershed assessment units and large rivers. The figure below is taken from page A-7, Section A of the 2014 IR. Ohio includes a brief summary of causes and sources as described below.



(Graphs from page A-7, Section A of Ohio's 2014 IR)

- Organic enrichment occurs as living organisms increase, then decompose and deplete oxygen supplies.
- Sediment/siltation includes deposition of fine soil particles, usually after high flow events as erosion and runoff occur, and sediment can transport other pollutants. Low flows deposit sediment and can degrade habitat for aquatic life.
- Nutrient enrichment is primarily due to phosphorus and nitrogen. Though these nutrients are not toxic, they affect the habitat by promoting excess algal growth, and the subsequent decay of algae that depletes oxygen for other organisms. Harmful Algal Blooms (HABs) may:
 - Introduce toxins into the water (e.g. microcystin)
 - Cause taste and odor problems in drinking waters,
 - Pollute beaches and surface waters with scum,
 - Reduce oxygen for fish and other animals,
 - Cause processing problems for public water supply,
 - Generate toxic chemicals.
- Habitat modification refers to manmade changes of a stream's natural channel for the purpose of improving drainage. The channel may be straightened, widened, or deepened, and the stream loses its function as an ecosystem or its ability to naturally process water pollutants.
- Hydromodification is flow alteration that may be due to stream impoundment, increased peak flow from urbanization, or water table regulation through sub-surface drainage. Current or flow changes may result and negatively affect the habitat.
- Pathogen contamination may be from human or animal waste that is conveyed to a stream and is a human health issue from skin contact or ingestion.

Section C of the 2014 IR: Managing Water Quality. This Section describes various surface water quality management programs and actions in Lake Erie, especially in the Western Basin, including active programs described in Section C of the 2014 IR. These efforts include the ongoing Remedial Action Plans (RAPs) in the Areas of Concern (AOCs) in the Maumee, Black, Cuyahoga and Ashtabula Rivers, all of which flow into Lake Erie. There are environmental restoration projects for these tributary rivers being implemented and funded under the Great Lakes Restoration Initiative (GLRI) and the Great Lakes Legacy Act (GLLA), to reduce nutrient loadings, including phosphorus, to the WLEB, remove contaminated sediments, restore habitat, remove dams, and other water-quality related efforts, with the ultimate goal of reducing the Beneficial Use Impairments (BUIs) for the AOCs.

The Lake Erie Lakewide Action and Management Plan (LAMP), formerly the Lakewide Management Plan (LaMP), and the RAPs are both focused on loading reduction and restoration of beneficial uses, using an ecosystem approach. The Great Lakes Water Quality Agreement (GLWQA) between the United States and Canada (amended in 2012), recognizes and describes the actions that will be taken through the LAMP and RAPs. Annex 2 of the GLWQA addresses lakewide management for each of the Great Lakes and includes development of nearshore monitoring to support a more integrated nearshore monitoring framework. Annex 4 addresses nutrient target development and loading reduction plans, and the monitoring will support the ecosystem objectives¹; Annex 7 provides a framework for native species and habitat protection.

Ohio EPA is actively monitoring Lake Erie, having initiated a *Comprehensive Nearshore Monitoring Program* in 2011 that will continue for several years using GLRI funding. Additional ambient sites and parameters, and greater evaluation of biological communities were based on the framework from the 2010 National Coastal Condition Assessment. The Ohio Lake Erie Phosphorus Task Force Phase 2 received GLRI funding in 2011 and revisited reduction targets and developed management recommendations. Future work will also extend beyond the shoreline to include harbors, bays, and estuaries, and will evaluate biological communities at various trophic levels. Intensive nearshore monitoring was completed in 2013, and includes a three-year monitoring design; the results from the first two years of this monitoring are included in the 2014 Integrated Report.

Ohio's Nonpoint Source (NPS) Program has several GLRI projects on creeks and rivers in watersheds that flow into Lake Erie, including the WLEB, or in headwaters that are part of watersheds that eventually flow to the Lake. The NPS Program is also now overseeing Ohio's Lake Erie Program, tracking implementation of RAPs, nearshore monitoring, and development and implementation of the Lake Erie LAMP.

¹ Under Annex 4, a loading target for phosphorus will be developed in 2015 for Lake Erie, followed by a load reduction plan in 2016 that will allocate phosphorus loadings between the United States and Canada.

The Section also discusses Ohio's Section 401 Certification. The CWA establishes state certification as part of the permitting process. Ohio may review and then certify, conditionally certify, or deny water quality certification for Federal permits or licenses that might result in a discharge to its waters, including wetlands. In the Ohio Administrative Code (OAC), rules for the 401 review process are found in Section 3745-1-05 (Stream Antidegradation), 3745-1-50 through 54 (Wetland Water Quality Standards), and 3745-32-01 through 07 (Water Quality Certification). Ohio's regulations require applicants to provide three alternatives for each proposed project: a preferred, minimal degradation, and non-degradation alternative. These alternatives are considered to minimize impacts on current aquatic resources and evaluate future mitigation. After review, Ohio will determine the best alternative. Ohio encourages permit applicants to coordinate in advance, as well as include 10 specific items within the 401 application before review may begin.

Section D of the 2014 IR: Framework for Reporting and Evaluation – Ohio continues to use the watershed orientation from previous reports and a framework for assessment of Aquatic Life, Recreation, Human Health, and Public Drinking Water Supply (PDWS) designated uses. The AUs for the 2014 IR have not changed significantly from the 2012 IR. The three types of AUs are: Watershed Assessment Units (WAU) for the streams, Large River Assessment Units (LRAU) for the large rivers, and Lake Erie is assessed in three units, the nearshore western basin, the nearshore central basin, and the Lake Erie Islands. Inland lake assessments and listings are within the WAU framework. Reporting and evaluation are completed by the Ohio EPA and outside entities that are certified as Level 3 qualified collectors, described previously in this document. Data may be chemical, physical, or biological. Ohio defers to ORSANCO for the Ohio River listings.

Public involvement is a large component of Ohio's listing framework. Of greatest public interest and concern in this listing cycle are the excessive algal blooms in the WLEB, as expressed in the public comment letters included in Section D. Ohio's responses show that it is taking actions that include monitoring, data assessment, and the listing of the shoreline of the WLEB for impairment of the PDWS use. Ohio has solicited comments on the proposed revision of Lake Erie sampling locations and methods, and the expansion of AUs to include Shoreline, Nearshore, and Offshore AUs for the Western, Sandusky and Central Basins, and an Islands Shoreline AU. EPA has reviewed Ohio EPA's responses to the comments it received, and finds Ohio EPA's responses to be reasonable.²

Comments were also submitted regarding wetlands, drinking water, mussels, and ammonia; EPA reviewed Ohio EPA's responses to the comments and finds that the comments are adequately addressed. Many comments regarding adequacy of E. coli data collection in streams and rivers came in to Ohio EPA's Division of Surface Water via webmail and were reasonably addressed.

² EPA, however, is deferring its decision regarding Ohio EPA not listing the waters beyond the shoreline AU of the WLEB for impairment of the PDWS use, as discussed in detail in Section H below.

Section E of the 2014 IR: Evaluating Beneficial Use – Human Health (Fish Contamination).

Ohio has human health water quality standards to protect the public from adverse impacts of contaminants found in drinking water and consumption of contaminated fish. Evaluation of public drinking water supply use is addressed separately in Section H below. Fish contamination as it affects human health (in Section E of the 2014 IR) is addressed through six contaminants which may bioaccumulate in fish tissue. Ohio measures the fish tissue concentration to determine whether exceedance of concentration values trigger a fish consumption advisory (FCA). Parameters for WQS and FCA are not the same because different assumptions are used in calculating fish consumption rates for fish advisories compared to calculating water quality standards. Standard development for water and its relationship to FCA is fully discussed in the Standards Section – Human Health, later in this document. EPA has concluded that Ohio has identified all the waters not attaining human health uses due to excess contaminants in fish tissue.

Section F of the 2014 IR: Evaluating Beneficial Use - Recreation. The LRAU, WAU, inland lakes, and shoreline AU for the Lake Erie Basin (Western, Central and Lake Erie Islands) were evaluated for recreational use. Table F-1, later in the standards section of this document, shows that water quality standards are based on the amount of human contact with the various waterbody types, i.e., bathing water, primary contact waters and secondary contact waters. *E. coli* standards are expressed as a seasonal geometric mean of 126 cfu/100ml during the recreational season; the single sample maximum is 235 cfu/100ml.

Section F of the 2014 IR states that Lake Erie beach advisories for each beach are based on “... exceedance of the single sample maximum *E. coli* criterion for beaches of 235 cfu/100 ml. This is the threshold that triggers the issuance of beach advisories, and has been used since 2006. Use of the single sample maximum *E. coli* criterion for the purpose of issuing beach advisories complies with the federal BEACH Act rule (*Water Quality Standards for Coastal and Great Lakes Recreation Waters*, 69 FR 67217, November 16, 2004), which became effective on December 16, 2004.” (2014 IR, F-9) This value is also used by health departments. Whenever this threshold was exceeded more than 10% of the recreational season from late May through early September, Ohio listed the Lake Erie beach as being in non-attainment (Table F-2 below). Section F also has tables that provide an overview of the various assessments for determining recreational use impairment for Lake Erie beaches.

Table F-2. Determining assessment status of Lake Erie shoreline AUs.

Lake Erie AU Assessment Status	Attainment Status of Individual Beaches
Full	Frequency of advisory postings less than 10% of recreation season for all of the beaches in the AU for all years assessed
Non	Frequency of advisory postings more than 10% of recreation season for one or more of the beaches in the AU for one or more of the years assessed

Table F-10 below shows the 63 Lake Erie beaches divided into the three geographical areas. The recreational season closings and the percentage of days in exceedance of *E. coli* from 2008-2012 are shown to be 15.9% of recreation days closings for the Western Basin, 21.8% for the Central Basin, and 1.1% for the Lake Erie Islands. Though this table provides an overall picture based on a compilation of data, there is great variation in the frequency of advisories and bacteria levels depending on data analysis (whether the seasonal geometric mean or the single sample maximum was exceeded). Further, there are great differences amongst: individual beaches; different seasons at the same beach; and the number of seasons used in the analysis.

Table F-10. Bathing water geometric mean *E. coli* exceedance frequency at 64 Lake Erie public beaches from 2008-2012 (pooled by Lake Erie AU to report use support).

	Western Basin	Central Basin	Lake Erie Islands
Number of beaches	15	47	2
Total recreation days	7,368	24,819	903
Total days in exceedance	1,171	3,731	10
Percentage of days in exceedance	15.9%	21.8%	1.1%
Average # of days <i>E. coli</i> criteria exceeded per beach per season ¹	15.6	17.6	1.0
Attainment status	Does not support	Does not support	Full support

¹ Calculated by dividing the total days in exceedance in a basin by the total number of beach seasons in the basin. The total number of beach seasons in a basin is equal to aggregated sum of the total number of beaches for which monitoring was conducted during each season for the 2008-2012 reporting period.

Table F-12 below shows the trend for the 2014 listing cycle compared to 2012 for rivers and streams in WAUs. For the 680 AUs analyzed for the 2014 report, 19% fully supported recreational use while 81% did not.

Table F-12. Overall differences in the assessment of recreation use attainment, 2010-2014.

	2010 Report		2012 Report		2014 Report	
	Number	Percent	Number	Percent	Number	Percent
Total AUs	1,576	100	1,576	100	1,576	100
Assessed	487	31	588	37	680	43
Not Assessed	1,089	69	988	63	896	57
Supporting Recreation Use	65	13 ^a	88	15 ^a	130	19
Not Supporting Recreation Use	422	87 ^a	500	85 ^a	550	81

^a Note: The percentage of AUs reported as supporting the recreation use and not supporting the recreation use are based on the total AUs that were assessed (e.g., 487 in the 2010 analysis).

Beaches at inland lakes are tested less frequently compared to Lake Erie beaches, and are not exceeding the bacteria limits as frequently as Lake Erie. The overall frequency of exceedances at inland lakes was 10.5% in a five year interval. The main exception was the inland lake Grand Lake St. Marys, where over 60% of the samples collected during the 2010 recreation season exceeded the single sample criterion. Ohio recommends more beach sampling at recreational locations where beach managers know that exceedances may cause harm via human contact with the water through bathing or swimming, and can adequately inform the public. EPA concurs with Ohio's listing of recreational use impairments.

Section G of the 2014 IR: Evaluating Beneficial Use – Aquatic Life Use (ALU). Table G-1 on the following page indicates that overall the WAUs achieving ALU changed slightly from 57.7% to 59.2% for the HUC 12 assessments (shown in the Figure in Section A above). Overall, the LRAUs achieving ALU changed from 89.0% to 89.2%, and the three Lake Erie AUs show that 13.2% of the sites are in full attainment for ALU. GLRI funding was used for the Lake Erie nearshore monitoring and assessment in this IR. Lake Erie sampling occurred using 91 fish community collections at 38 sites in 2011-2013. In Table G-1 below, the decrease in full attainment in Lake Erie AUs (from 30.4% in 2012 to 13.2% in 2014) appears significant when compared to the last listing cycle. This change occurred because data were severely restricted for the 2012 cycle due to outdated data from 1999 - 2000 being excluded; only 2001 – 2002 data were used to evaluate in the 2012 cycle. The current cycle impairment values are not significantly different than previous cycles using 10 years of data (e.g., 14.7% in full attainment in 2010). EPA concurs with Ohio's listing of aquatic life use impairments.

Table G-1. Summary of aquatic life use assessment for Ohio's watershed¹, large river, and Lake Erie assessment units: 2002-2014 Integrated Report cycles.

IR Cycle	2002 (1991-2000)	2004 (1993-2002)	2006 (1995-2004)	2008 (1997-2006)	2010 (1999-2008)	2012 (2001-2010)	2014 (2003-2012)
HUC11 Watershed AUs (331)							
No. AUs Assessed (% of total)	224 (68%)	225 (68%)	212 (64%)	218 (66%)	221 (67%)	-	
No. Sites Assessed	3272	3620	3785	4030	4200	-	
Average AU Scores							
Full Attainment	46.6	48.3	52.5	54.7	58.5	-	
Partial Attainment	25.2	23.6	22.6	22.4	21.2	-	
Non-Attainment	28.2	28.1	24.9	22.9	20.3	-	
HUC12 Watershed AUs (1538)							
No. AUs Assessed (% of total) ²	-	-	-	-	999 (65%)	908 (59%)	933 (61%)
No. Sites Assessed	-	-	-	-	4200	3867	3876
Average AU Score ³	-	-	-	-	56.7	57.7	59.2
% Sites Full Attainment	-	-	-	-	55.1	57.0	57.8
% Sites Partial Attainment	-	-	-	-	20.0	21.6	22.3
% Sites Non-Attainment	-	-	-	-	24.9	21.4	19.9
Large River AUs (23 rivers/38 AUs totaling 1247.54 Miles)							
No. Rivers/AUs Assessed	22	21	17	16	18/30	18/31	22/37
No. Sites Assessed	422	425	374	278	265	312	332
No. Miles Assessed (% of total)	905 (70%)	918 (71%)	873 (68%)	850 (66%)	852 (69%)	984 (80%)	1147 (92%)
% Miles Full Attainment	62.5	64.0	76.8	78.7	93.1	89.0	89.2
% Miles Partial Attainment	23.0	21.4	15.1	13.9	5.5	7.5	6.3
% Miles Non-Attainment	14.5	14.6	8.1	7.4	1.4	3.5	4.5
Lake Erie AUs (3)							
No. AUs Assessed	3	3	3	3	3	3	3
No. Sites Assessed ⁴	92	111	93	49	34	23	38
% Sites Full Attainment	12.0	18.0	19.4	10.2	14.7	30.4	13.2
% Sites Partial Attainment	13.0	14.4	16.1	22.4	17.7	30.4	34.2
% Sites Non-Attainment	75.0	67.6	64.5	67.4	67.6	39.2	52.6

¹ WAUs for the IR 2002-2010 cycles were based on HUC11s; WAUs transitioned to HUC12s for cycles beginning with 2010.

² 2010 statistics based on direct assessment of HUC12 AUs with data collected between 2005 and 2008 (n=545) and HUC11 extrapolated assessment of HUC12 AUs with data collected between 1998 and 2004 (n=454). 2012 and 2014 assessments based on direct assessment of HUC12 AUs with data collected between 2001 and 2010 (n=908) and 2003 and 2012 (n=933), respectively.

³ Statistic based on the average of available AU scores with current data, derived as explained in Section G2.2.

⁴ Data for sites used in the 2002-2012 IR cycles were generally collected between 1993 and 2002; for the 2014 IR, data were collected 2011-2013.

Section H of the 2014 IR: Evaluating Beneficial Use: Public Drinking Water Supply. Ohio has, for the first time, assessed and listed the shoreline of the WLEB for the PDWS use due to microcystin levels measured above threshold values of 1 µg/L. EPA commends Ohio for expanding its PDWS assessment to include microcystin, and supports Ohio's listing of the shoreline AU of the WLEB for impairment of the PDWS use based on microcystin.

EPA is deferring its final decision on the Section 303(d) listing status of the waters beyond the shoreline AU of the WLEB for impairment of the PDWS use. EPA's deferral is limited to the impairment status of the waters beyond the shoreline AU of the WLEB related to microcystin impacts to the PDWS use. In the next listing cycle, Ohio has proposed to expand the number and boundaries of the AUs for Lake Erie to include shoreline, nearshore, and offshore AUs, and would cover all drinking water intakes in the Western Basin of Lake Erie for the next listing cycle.

For the 2014 IR, Ohio EPA used chemical water quality data from 2008 to 2012 to assess waters designated for PDWS use. The PDWS use is assessed within 500 yards of active drinking water intakes and on all publicly owned lakes. (See Table D-2, 2014 IR) Between 2010 and 2012, Ohio EPA collected 487 raw and finished drinking water cyanotoxin samples, and public water system providers submitted results for an additional 455 cyanotoxin samples. Ohio EPA reports that of these samples only one finished (i.e., treated) drinking water sample contained microcystin above the 0.3 ug/L reporting limit, but that sample was also below Ohio's drinking water threshold.

As mentioned above, Ohio EPA assessed and listed the shoreline AU of the WLEB, the only AU Ohio EPA listed on its 2014 303(d) list for impairment of the PDWS use based on microcystin. The 2014 listing cycle is the first time Ohio EPA used an algal toxin indicator to assess the Lake Erie shoreline AUs for impairment of the PDWS use. As part of its May 2013 Public Water System Harmful Algal Bloom Response Strategy, Ohio EPA selected the World Health Organization (WHO) provisional threshold of 1 µg/L for microcystin-LR as the algal toxin indicator. Based on data showing that at least two raw samples exceeded the 1 µg/L threshold at five drinking water intakes in the WLEB, Ohio EPA listed the WLEB shoreline as impaired for the PDWS use. Two of the five drinking water intakes from which data were evaluated are located outside of Ohio's current boundary for the shoreline AU. The two intakes outside the shoreline AU are the Toledo and Oregon intakes. Even though Ohio did not include the location of these two intakes on its Section 303(d) list, Ohio EPA based its listing of the shoreline AU as impaired for the PDWS use on microcystin data from the Toledo and Oregon intakes and intakes located within the physical boundary of the shoreline AU as described in Sections H.3 and H.4 of the 2014 IR. In response to questions from EPA about listing the open waters of the WLEB based on the location of the Toledo and Oregon intakes, Ohio stated that as part of its 2016 IR, it expects to "present a final expanded set of AUs and be able to provide a more complete analysis (and possibly 303(d) listings where appropriate) for the PDWS and human health uses (based on fish tissue) for the open waters of Lake Erie." (Letter from OEPA to EPA dated May 28, 2014.) Finally, Ohio EPA stated that in the interim it is working to address problems in Lake Erie through nutrient TMDLs on tributaries, initiatives to reduce nutrient loads, and other Great Lakes Water Quality Agreement efforts, including active participation in developing a phosphorus target for Lake Erie under Annex 4 to the Agreement.

EPA is deferring final action on the listing status of the waters beyond the shoreline AU of the WLEB for the PDWS use in order to continue to consider the outcome of Ohio's efforts to advance the assessment and listing of Lake Erie waters impaired for the PDWS use. Ohio's proposed AUs include a shoreline, nearshore and offshore AUs for the WLEB, and EPA expects Ohio EPA to evaluate and assess all readily available microcystin data for the next listing cycle, and to list any AUs where existing and readily available data shows an impairment of the PDWS use.

Section I of the 2014 IR: Considerations for Future Lists.

Lake Erie PDWS

In Section I, subsection I 5.2.2 (Defining Assessment Units) of its IR, Ohio EPA describes proposed changes to future assessments to include a total of ten AUs for Lake Erie. The proposed Lake Erie AUs are the shoreline, nearshore, and offshore for the Western, Sandusky and Central Basins, and the Islands shoreline, at depths as shown in Figure I 5-1 below. Because the Western and Sandusky Basin are relatively shallow, the boundary between the nearshore and offshore AUs in those basins is the seven meter depth contour, while the cutoff for the Central Basin is the 15 meter depth contour.

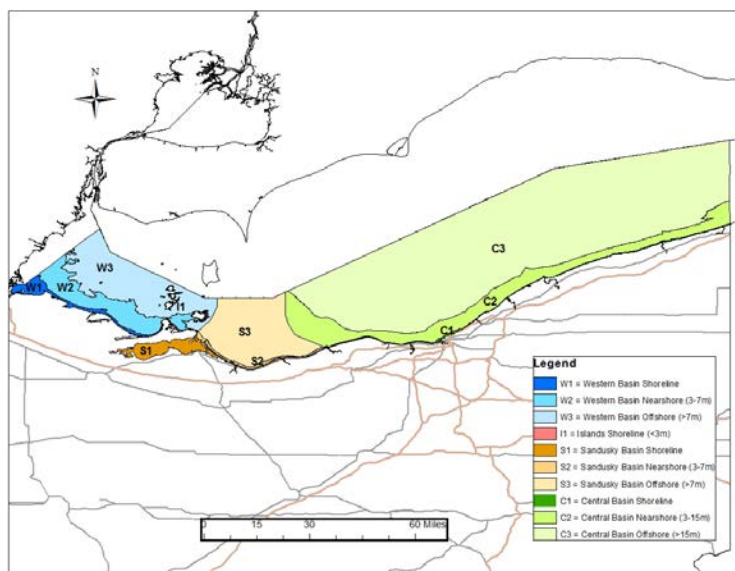


Figure I 5-1. Proposed Ohio Lake Erie Assessment Units

Section I, subsection I.5.2.3, of the 2014 IR discusses sources of data and the Ohio Credible Data Law 2003 (ORC 6111.50 to 6111.56). Ohio EPA states that when making attainment determinations it relies upon data certified as Level 3 data, and that the only currently available Level 3 data are from Ohio EPA ambient monitoring stations and from the Northeast Ohio Regional Sewer District. Ohio EPA expects that Level 3 data will be available from other sources in the future, including EPA data that was collected in 2014, and will be collected annually, by the R/V Lake Guardian. EPA will coordinate with Ohio EPA and expects Ohio EPA to fully assess the ten AUs for Lake Erie and to assemble and evaluate all existing and readily available data, including EPA data, for the 2016 integrated report and listing cycle.

Algae

EPA notes that Ohio has not assessed Lake Erie with respect to the State's narrative criteria at OAC 3745-01-04(E), prohibiting, among other things, nuisance growths of algae created by nutrients entering the water as a result of human activity. Given the prevalence of HABs in the WLEB, in EPA's April 15, 2014 letter to OEPA, EPA encouraged Ohio to develop a methodology for assessing for attainment of the nuisance algal growth narrative water quality criteria. Ohio responded in a letter on May 28, 2014 that it would consider those methods that meet its requirement for credible data, and that biomass may be used once a reliable method is established and accepted. Finally, in its future assessment of the new Lake Erie AUs, EPA requests that Ohio consider the impacts of HABs and nuisance algal growth on aquatic life use, in addition to the impacts on recreational use.

HABs are increasing spatially and temporally in this country and around the world. HABs produce cyanotoxins that affect the skin, liver or nervous system, and can deplete oxygen levels for aquatic life due to biomass from excessive algal blooms. These algae are very adaptable to many water conditions and may experience rapid growth, especially when excess phosphorus is introduced to a water body. The cyanotoxins are recognized to be a hazard to humans, animals, and ecosystems by many agencies, including the EPA, the Center for Disease Control, and the WHO. The WHO has developed risk-based thresholds for microcystin, anatoxin-a, cylindrospermopsin, and saxitoxin for adults for recreation and drinking water uses. Ohio EPA is using the same thresholds for determining impairment to drinking water, but focused only on microcystin in this listing cycle.

In 2011 Ohio released a strategy to protect people from the toxins in public recreational waters. Advisories are posted when there may be a risk for human health and illness. Eight State Park lakes and three Lake Erie beaches had advisory postings in 2012, as did Buckeye Lake beaches, Maumee Bay, and Euclid Beach; Grand Lake St. Marys was posted with advisories for 100% of the 2012 recreational season. There were three reports of human illness in 2011 and 2012, and one dog death in 2011 for Grand Lake St. Marys.

Section I also discusses algal toxin monitoring results in recreational waters, drinking water, and fish tissue. Monitoring for 2012 detected high levels of various algal toxins in Grand Lake St. Marys and Buckeye Lake above 2011 levels. Dillon Lake State Park showed a different bloom with a different toxin in 2012 than in previous years (a bright red bloom caused by *Euglena sanguinea*). There was an increase in algal toxin monitoring in raw and treated drinking water between 2010 and 2012. Ohio collected 487 raw water samples, and 455 samples were voluntarily submitted by public water systems, which included locations at inland lakes and Lake Erie. The majority of drinking water sources contained cyanotoxins at levels above the reporting limit. Sampling showed that cyanotoxins continued to increase at the City of Celina's intake on Grand Lake St. Marys (in raw, unfinished water). HABs were present at water supplies in every Ohio EPA district and in the western and central Lake Erie basins (2014 IR Section I 4.3.2).

Methodologies for analyzing cyanobacterial algal toxins in fish tissue are being developed to determine acceptable human consumption rates and human health hazards. Ohio EPA is continuing further analysis for sampling of the algal toxin microcystin in fish fillets via a grant from the Ohio Water Development Authority, contracted to The State University of New York. Prior to 2010, it did not appear that microcystin was accumulating in fish tissue, but in 2011 it was detected in sufficient concentrations to result in an advisory for black crappie in 2011, and there was detection in one common carp.

Ohio has increased its Lake Erie water quality sampling since the last listing cycle through the National Coastal Condition Assessment (NCCA) in 2010. This assessment used a statistical survey designed to report on the condition of marine and Great Lakes coasts, and Ohio worked through EPA's Great Lakes National Program Office (GLNPO) to gain experience with sampling methods. Sampling was completed at previously established monitoring stations that had not been visited since the 1990's. Additional sampling was completed with GLRI funding including the assessment of zooplankton and phytoplankton in open waters, and fish, macroinvertebrates, and periphyton in the shoreline, bays, harbors and estuaries.

Section J of the 2014 IR: Addressing Waters not Meeting Water Quality Goals – Section J reviews and summarizes the listing framework, explains the prioritization and delisting process and results, and reports on Ohio's TMDL program and schedule for TMDL development and monitoring. Table J-1 below shows the attainment and listing categories Ohio uses, with the shaded categories indicating those defined by EPA. New categories in this listing cycle are 1d, which is for locations where a TMDL is complete but new data show the AU is meeting water quality standards, and 5d for locations where a TMDL is complete but new data show the AU is not meeting water quality standards due to new contaminants.

Table J-1 below from the 2014 IR includes the attainment, impairment, or unknown status in each designated use category. Also new for this listing cycle is subcategory "t", which includes waters for which a TMDL has been completed at a different Hydrologic Unit scale, that is, approved at the HUC-11 scale then reassessed within the new HUC-12 scale. Table J-4 below from the 2014 IR includes a summary of waters impaired or attaining standards for each beneficial use for each type of AU.

Table J-1. Category definitions for the 2014 Integrated Report and 303(d) list.

Category ¹		Subcategory	
0	No waters currently utilized for water supply		
1	Use attaining	d	TMDL complete; new data show the AU is attaining water quality standards
		h	Historical data
		t	TMDL complete at 11-digit hydrologic unit scale; AU is attaining water quality standards at 12-digit hydrologic unit scale
		x	Retained from 2008 IR
2	Not applicable in Ohio system		
3	Use attainment unknown	h	Historical data
		i	Insufficient data
		t	TMDL complete at 11-digit hydrologic unit scale; there may be no or not enough data to assess this assessment unit at the 12-digit hydrologic unit scale
		x	Retained from 2008 IR
4	Impaired; TMDL not needed	A	TMDL complete
		B	Other required control measures will result in attainment of use
		C	Not a pollutant
		h	Historical data
		n	Natural causes and sources
		x	Retained from 2008 IR
5	Impaired; TMDL needed	M	Mercury
		d	TMDL complete; new data show the AU is not attaining water quality standards
		h	Historical data
		x	Retained from 2008 IR

¹ Shading indicates categories defined by U.S. EPA; additional categories and subcategories are defined by Ohio EPA.

Table J-4. Summary of results for each beneficial use¹.

	Human Health (Fish Contaminants)	Recreation	Aquatic Life	Public Drinking Water
Watershed assessment units				
Not being used for public water supply	0	0	0	1427
Attains	191	141	341	33
Unknown	926	511	220	67
Impaired, needs TMDL	421	461	479	10
Impaired, TMDL complete	0	425	420	1
Impaired, other remedy	0	0	0	0
Impaired, not pollutant	0	0	11	0
Impaired, natural condition	0	0	67	0
Total watershed units evaluated	1538	1538	1538	1538
Large river assessment units				
Not being used for public water supply	0	0	0	29
Attains	1	3	18	1
Unknown	2	10	0	4
Impaired, needs TMDL	35	21	14	4
Impaired, TMDL complete	0	4	3	0
Impaired, other remedy	0	0	0	0
Impaired, not pollutant	0	0	3	0
Total large river units evaluated	38	38	38	38
Lake Erie assessment units				
Attains	0	1	0	2
Unknown	0	0	0	0
Impaired, needs TMDL	3	2	3	1
Total Lake Erie units evaluated	3	3	3	3

¹ Reported using federally-defined categories (see Table J-1), except for two defined by Ohio (category 0 (not being used for public water supply) and subcategory 4n (impaired due to natural condition)). Other Ohio-defined subcategories are included in federal categories.

Section M of the 2014 IR: An Overview of Ground Water Quality in Ohio – Section M reviews programs that monitor, evaluate, and protect ground water. Table M-2 below from the 2014 IR includes data from entities and programs that report and summarize ground water contamination by facility. These include the federal National Priorities List (NPL), CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System), the Department of Defense/Department of Energy (DOD/DOE), Leaking Underground Storage Tanks (LUST), RCRA Corrective Actions, and Underground Injection. Analyses include inorganic and organic pesticides, halogenated solvents, petroleum compounds, nitrate, fluoride, salinity, metals, radionuclides, bacteria, protozoa, viruses, and VOCs. Sources of contaminants (as shown in Map M-4 in the 2014 IR) are varied and include fertilizer applications, manure applications, storage tanks, landfills, septic systems, shallow injection wells, hazardous waste sites, pipelines and sewer lines, salt storage and road salting, small scale shops, and urban runoff (stormwater management).

Table M-2. Ground water contamination summary.

Hydrogeologic Setting: Statewide

Data Reporting Period: As of September, 2013

Source Type	Number of sites	Number of sites that are listed and/or have confirmed releases	Number of sites with confirmed ground water contamination	Contaminants
NPL - U.S. EPA	37	37	34	Mostly VOCs and heavy metals; also, SVOCs, PCBs, PAHs and others
CERCLIS (non-NPL) - U.S. EPA	438	438	20	Varied
DOD/DOE	128 ^a	71	68	Varied
LUST	33,858 ^b	3,355	233 ^c	BTEX
RCRA Corrective Action	130	130	130	VOCs, heavy metals, PCBs, and others
Underground Injection	Class ^d : I - 10 II - 362 III - 46 IV - 0 V - 50,000+	0 0 0 0 NA	0 0 0 0 NA	
State Sites ^e	636	636	253 ^f	Varied
Nonpoint Sources	NA	NA	NA	

Notes:

NA - Numbers not available

^a Includes DOE, DOD, FUSRAP and FUD sites

^b Includes only active LUST sites - Source: Ohio's State Fire Marshal, Bureau of Underground Storage Tank Regulations

^c Sites in Tier 2 or Tier 3 cleanup stages. Source: Ohio's State Fire Marshal, Bureau of Underground Storage Tank Regulations

^d Class II and Class III injection wells regulated by the Ohio Department of Natural Resources, Division of Oil and Gas Resources. Class IV injection wells are illegal in Ohio. The total number of Class V injection wells in Ohio is unknown.

^e Facilities in Ohio EPA's Ground Water Impacts database

^f A site is considered to be contaminating ground water if the "Uppermost Aquifer" or "Lower Aquifer" is noted to be impacted, found in Ohio EPA's Ground Water Impacts database

A Maximum Contamination Limit (MCL) exceedance is used as the criterion for determining impairment of public water systems (PWS) or wells. A location is included on the "watch list" if the measured value is 50% to 100 % of the MCL. Ohio includes impaired and watch list distribution maps for arsenic, sulfate, fluoride, and nitrate. Table M-4A is a comprehensive count of PWSs where 2003-2013 decadal mean values of compliance data occur in the Watch List and Impaired Waters category and is incorporated by reference. Presentation is by chemical, standard type, standard, major aquifer (rock type), total PWS for raw and treated water on the Watch List or Impaired Waters List.

Ohio River Listing

The AUs associated with the main stem of the Ohio River are assessed by the Ohio River Valley Sanitation Commission (ORSANCO), which reports its findings in a Section 305(b) report. ORSANCO is an interstate agency charged with abating pollution in the Ohio River Basin and preventing future degradation of its waters. ORSANCO was established in 1948 through the

signing of the Ohio River Valley Water Sanitation Compact by representatives of the eight member states. Through this Compact, ORSANCO has been given authority to develop the Section 305(b) report for the Ohio River. Ohio participates in the ORSANCO workgroup to promote consistency between 305(b) reporting and 303(d) listing. In the past, Ohio EPA has incorporated ORSANCO's 305(b) assessment into its Integrated Report for those portions of the Ohio River located within the State of Ohio. Section D4 of the 2014 Integrated Report states that Ohio EPA defers to the impaired segment assessment found in the *2012 Biennial Assessment of Ohio River Water Quality Conditions* (ORSANCO 2012). These waters are incorporated into Ohio's 303(d) list by reference. Section J2 of the 2014 IR states that ORSANCO has lead responsibility for doing the technical work in developing TMDLs for the Ohio River. However, ORSANCO is not required under 303(d) to submit the TMDLs to EPA for approval. Although ORSANCO is working on the development of bacteria TMDLs for the mainstem of the Ohio River in cooperation with its member states and the EPA, its authority is limited to assessments under 305(b).

EPA's monitoring and assessment program is coordinating with ORSANCO to review monitoring strategies for the next funding cycle.

Water Quality Standards

Ohio water quality standards consist of designated uses, and numeric and narrative criteria designed to protect and measure attainment of the uses (OAC 3745-1-07(A)). A water body may have more than one use designation. Each water body in the State is assigned an aquatic life habitat use designation, and may also be assigned a water supply use designation and/or one recreational use designation (OAC 3745-1-07(A)(1)). Ohio has multiple sub-categories or tiers in its aquatic life use designation system (coldwater, seasonal salmonid, exceptional warmwater, warmwater, and modified warmwater habitats, and limited resource waters) (OAC 3745-1-07(B)(1)). Ohio water quality standards include three categories for both the recreational (bathing waters, primary contact and secondary contact recreation) and water supply (public, agricultural, and industrial) use designations. The Ohio Administrative Code contains statewide chemical-specific criteria for the support of use designations (OAC 3745-1-07(A)(2)). The following Table D-1 is taken from Section D2 of the 2014 Integrated Report, and shows the designated uses, beneficial use categories, attributes of each category, and evaluation status for the 2014 IR (the date in the title of Table D-1 is in error, it has been updated for 2014).

Table D-1. Ohio water quality standards in the 2012 Integrated Report.

Beneficial Use Category	Key Attributes (why a water would be designated in the category)	Evaluation status in 2014 Integrated Report
<i>Categories for the protection of aquatic life</i>		
Coldwater Habitat	native cold water or cool water species; put-and-take trout stocking	Assessed on case by case basis
Seasonal Salmonid Habitat	supports lake run steelhead trout fisheries	No direct assessment, streams assessed as EWH or WWH
Exceptional Warmwater Habitat	unique and diverse assemblage of fish and invertebrates	61% of the WAUs and 92% of the LRAUs fully assessed using direct comparisons of fish and macroinvertebrate community index scores to the biocriteria in Ohio's WQS; sources and causes of impairment were assessed using biological indicators and water chemistry data
Warmwater Habitat (WWH)	typical assemblages of fish and invertebrates	
Modified Warmwater Habitat	tolerant assemblages of fish and macro-invertebrates; irretrievable condition precludes WWH	
Limited Resource Waters	fish and macroinvertebrates severely limited by physical habitat or other irretrievable condition	Assessed on case by case basis
<i>Categories for the protection of recreational activities</i>		
Bathing Waters	Lake Erie (entire lake); for inland waters, bathing beach with lifeguard or bathhouse facility	Lake Erie public beaches fully evaluated; nine inland lakes evaluated
Primary Contact Recreation	waters suitable for one or more full-body contact recreation activity such as wading and swimming; three classes are recognized, distinguished by relative potential frequency of use	43% of the WAUs, 42% of the LRAUs, and 100% of beaches in LEAUs assessed using applicable PCR geometric mean <i>E. coli</i> criteria
Secondary Contact Recreation	waters rarely used for recreation because of limited access; typically located in remote areas and of very shallow depth	Assessed as part AU using applicable SCR geometric mean <i>E. coli</i> criteria
<i>Categories for the protection of water supplies</i>		
Public Water Supply	waters within 500 yards of all public water supply surface water intakes, publically owned lakes, waters used as emergency supplies	Sufficient data were available to assess 37% of the 129 AUs with PDWS use; assessed using chemical water quality data; only waters with active intakes were assessed
Agricultural Water Supply	water used, or potentially used, for livestock watering and/or irrigation	Not assessed
Industrial Water Supply	water used for industrial purposes	Not assessed

Human Health: Ohio explains the linkage of water chemistry, fish tissue contaminants, and fish consumption advisories (FCAs) in Section E2 of the 2014 IR for human health standards development. WQS are based on the concentration of chemicals in water, but because the chemicals are known to bioaccumulate in fish, chemical measurements in fish tissue are taken into account for WQS development and for listing. A FCA provides the amount of fish from those waters that may safely be consumed and still protect human health.

There are criteria for six contaminants, mercury, PCBs, chlordane, DDT, mirex, and hexachlorobenzene for assessing attainment of the human health designated use related to fish consumption, with data used from both fish tissue and the water. These contaminants may bioaccumulate in fish and fish tissue data are used to determine whether a FCA is warranted for the protection of human health. Decisions on whether to list these waters are dependent on individual conditions (See Table E-1 below). The FCA may be considered by the state when

making a listing decision, but listing is not based solely on that waterbody having a FCA. For example, if a fish consumption advisory is less protective than the WQS, the waterbody will be listed as impaired; if the advisory is more protective and the WQS is not exceeded, the water may not be listed even if it has a FCA (See Figure E-1 below).

Table E-1. Comparison between fish concentration values and FCA program values.

Basin / Parameter	Fish concentration on which the WQS is based ¹	Range of fish concentrations triggering an "eat no more than one meal per week" advisory	Range of fish concentrations triggering an "eat no more than one meal per month" advisory
Lake Erie / PCB	23 µg/kg	50 - 220 µg/kg	221 - 1,000 µg/kg
Ohio River / PCB	54 µg/kg	50 - 220 µg/kg	221 - 1,000 µg/kg
Lake Erie / mercury	350 µg/kg	110 - 220 µg/kg	221 - 1,000 µg/kg
Ohio River / mercury	1,000 µg/kg	110 - 220 µg/kg	221 - 1,000 µg/kg
Lake Erie / DDT	140 µg/kg	500 - 2,188 µg/kg	2,189 - 9,459 µg/kg
Ohio River / DDT	320 µg/kg	500 - 2,188 µg/kg	2,189 - 9,459 µg/kg
Lake Erie / Chlordane	130 µg/kg	500 - 2,188 µg/kg	2,189 - 9,459 µg/kg
Ohio River / Chlordane	310 µg/kg	500 - 2,188 µg/kg	2,189 - 9,459 µg/kg
Lake Erie / Hexachlorobenzene	29 µg/kg	800 - 3,499 µg/kg	3,500 - 15,099 µg/kg
Ohio River / hexachlorobenzene	67 µg/kg	800 - 3,499 µg/kg	3,500 - 15,099 µg/kg
Lake Erie/ mirex	88 µg/kg	200 - 874 µg/kg	875 - 3,783 µg/kg
Ohio River/ mirex	200 µg/kg	200 - 874 µg/kg	875 - 3,783 µg/kg

Values	Advisory is less protective than the WQS criterion, WQS exceeded, waterbody impaired
Values	Advisory is more protective than WQS criterion, WQS not exceeded, no impairment from FCA
Values	Advisory may be more, or less, protective than WQS criterion

¹ See Section E4 for an explanation of how these concentrations were calculated.

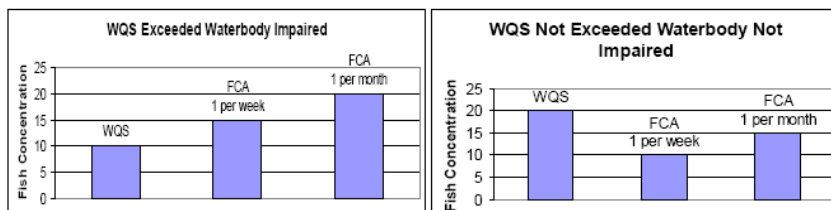


Figure E-1. Illustration of the relationship among the WQS values, the values that trigger issuance of FCAs and the resulting decision regarding waterbody impairment associated with an FCA.

Recreation: Ohio water quality standards state that Ohio may also designate a water body for recreational use (OAC 3745-1-07(A)(1)). Under the Ohio Administrative Code, recreational designations are in effect from May 1st to October 31st (OAC 3745-1-07(B)(4)). Table F-1 below, describes the methodology using the geometric mean. For bathing waters, the geometric mean *E. coli* shall not exceed 126 cfu per 100 ml in the recreational season and shall not exceed

235 cfu per 100 ml in a single sample. *E. coli* for primary and secondary contact recreation waters may not exceed the geometric mean values for these waters. Water quality standards for primary and secondary contact recreation waters do not include a single sample maximum criterion.

Table F-1. Summary of the recreation use assessment methods.

Bathing Waters		
Indicator	Criterion (Table 7-13, OAC 3745-1-07)	Assessment Method Summary
<i>E. coli</i>	Seasonal geometric mean <i>E. coli</i> content* based on samples from the recreation season within a calendar year is 126 cfu/100 ml; single sample maximum is 235 cfu/100 ml.	Applied to the three Lake Erie assessment units, exceedance of the geometric mean bathing water criterion or an exceedance of the single sample maximum for more than 10% of the recreation season is considered an impairment of the bathing water use.
Primary Contact and Secondary Contact		
Indicator	Criterion (Table 7-13, OAC 3745-1-07)	Assessment Method Summary
<i>E. coli</i>	Seasonal geometric mean <i>E. coli</i> content* based on samples from the recreation season within a calendar year is: Primary Contact Waters Class A: 126 cfu/100 ml Class B: 161 cfu/100 ml Class C: 206 cfu/100 ml Secondary Contact Waters 1030 cfu/100 ml	Applied to streams and inland lakes. Data from a recreation season are assessed on a site-by-site basis and compared to the applicable geometric mean <i>E. coli</i> criterion whenever more than one sample result is available for a WAU. Assessment units are considered to be in full attainment if all sites assessed within the AU meet the applicable geometric mean criterion and in non-attainment if one or more sites assessed within the AU exceed the applicable geometric mean criterion.

* *E. coli* concentrations are expressed in colony forming units (cfu) per 100 milliliters (ml)

Aquatic Life Use: Ohio's standards contain numeric biological criteria that describe the expected biological performance of Ohio's wadeable and boatable rivers and streams. These biocriteria are codified in Ohio's water quality standards (OAC 3745-1-07, Table 7-15). Ohio EPA uses the numeric biological criteria to interpret the data generated when a biological assessment of a stream is conducted (OAC 3745-1-07(A)(6)). Through a use attainability analysis, a given stream reach may be assigned an appropriate aquatic life use. Biological sampling is conducted to establish attainment status, with further sub-classification based on ecoregion and size of waterbody. Ohio uses evidence from physical habitat surveys that include the characteristics of the stream that are critical to supporting aquatic life: 1) substrate, 2) in-stream cover, 3) channel morphology, 4) riparian zone and bank erosion, 5) pool/glide and riffle/run quality, and 6) gradient. Observed scores are compared with the target scores and a percentage deviation from the target is calculated.

Although chemical and physical data are collected as part of Ohio EPA's comprehensive watershed evaluations, the performance of the fish and macroinvertebrate communities is used to determine attainment status. Section G discusses the biosurveys that measure performance. For a sampling site to be classified as being in full attainment it must meet the relevant criteria in

three indices: Index of Biotic Integrity (IBI) (fish); the Modified Index of Well-being (MIWb) (fish); and, the Invertebrate Community Index (ICI) (OEPA 1999). The chemical and physical scores are used to confirm the biological impairment or attainment determination.

Public Drinking Water Supply: Ohio's water quality standards state that Ohio may also designate a water body for water supply use (OAC 3745-1-07(A)(1)). Ohio has three water supply uses: public, agricultural, and industrial. A public water supply is a water that with conventional treatment will be suitable for human intake and meet federal regulations for drinking water (OAC 3745-1-07(B)(3)(a)). PDWS are designated waters within 500 yards of an active intake or waters of a publicly owned lake. Ohio EPA collected and reviewed data from public water systems for treatment methods, locations of intakes, number of reservoirs, and water quality. Ohio EPA also collected data in 2009 to better evaluate the algal toxin threat to drinking water by obtaining information on treatment processes, algae control measures, and source water treatment costs. Sampled water quality data (using average annual values for all contaminants except for nitrates) were compared to the numeric chemical water quality criteria for the protection of human health (OAC 3745-1-33 and 34).

Section H in the 2014 Integrated Report summarizes the PDWS assessment. Evaluation methodology includes measurement of both treated waters and source waters, using nitrate, pesticides, cyanotoxins, and *Cryptosporidium* as indicators of water quality, using criteria and conditions as described in Table H-1 below. The waters are determined to be in full support, impaired, not assessed, or put on a "watch list", i.e., targeted for additional monitoring and assessment, applicable to any of the contaminants.

Table H-1. Public drinking water supply attainment determination.

Applies to ambient and treated water quality data from 2008 through December 2012.

Indicator	Impaired Conditions
Nitrate	<input type="checkbox"/> Two or more excursions ¹ above 10.0 mg/L within the 5 year period
Pesticides	<input type="checkbox"/> Annual average exceeds WQ criteria (atrazine = 3.0 µg/L)
Other Contaminants	<input type="checkbox"/> Annual average exceeds WQ criteria
Algae: Cyanotoxins ²	<input type="checkbox"/> Two or more excursions ¹ above the state drinking water thresholds (microcystins = 1.0 µg/L) within the 5 year period
<i>Cryptosporidium</i> ³	<input type="checkbox"/> Annual average exceeds WQ criterion (1.0 oocysts/L)
Indicator	Full Attainment Conditions
Nitrate	<input type="checkbox"/> No more than one excursion ¹ above 10.0 mg/L within the 5 year period
Pesticides	<input type="checkbox"/> Annual average does not exceed the WQ criteria (atrazine = 3.0 µg/L)
Other Contaminants	<input type="checkbox"/> Annual average does not exceed the WQ criteria
Algae: Cyanotoxins	<input type="checkbox"/> No more than one excursion ¹ above the state drinking water thresholds (microcystins = 1.0 µg/L) within the 5 year period
<i>Cryptosporidium</i>	<input type="checkbox"/> Annual average does not exceed the WQ criterion
Indicator	"Watch List" Conditions <i>Source waters targeted for additional monitoring and assessment</i>
Nitrate	<input type="checkbox"/> Maximum instantaneous value > 8 mg/L (80% of WQ criterion)
Pesticides	<input type="checkbox"/> Running quarterly average ≥ WQ criteria <input type="checkbox"/> Maximum instantaneous value ≥ 4x WQ criteria
Other Contaminants	<input type="checkbox"/> Maximum instantaneous value ≥ WQ criteria
Algae: Cyanotoxins	<input type="checkbox"/> Maximum instantaneous value ≥ 50% of the state drinking water thresholds
<i>Cryptosporidium</i>	<input type="checkbox"/> Annual average ≥ 0.075 oocysts/L

¹ Excursions must be at least 30 days apart in order to capture separate or extended source water quality events.

² Impaired conditions based on source water detections at inland public water systems and detections at public water system intakes for Lake Erie source waters. Cyanotoxins include: microcystins, saxitoxin, anatoxin-a, and cylindrospermopsin.

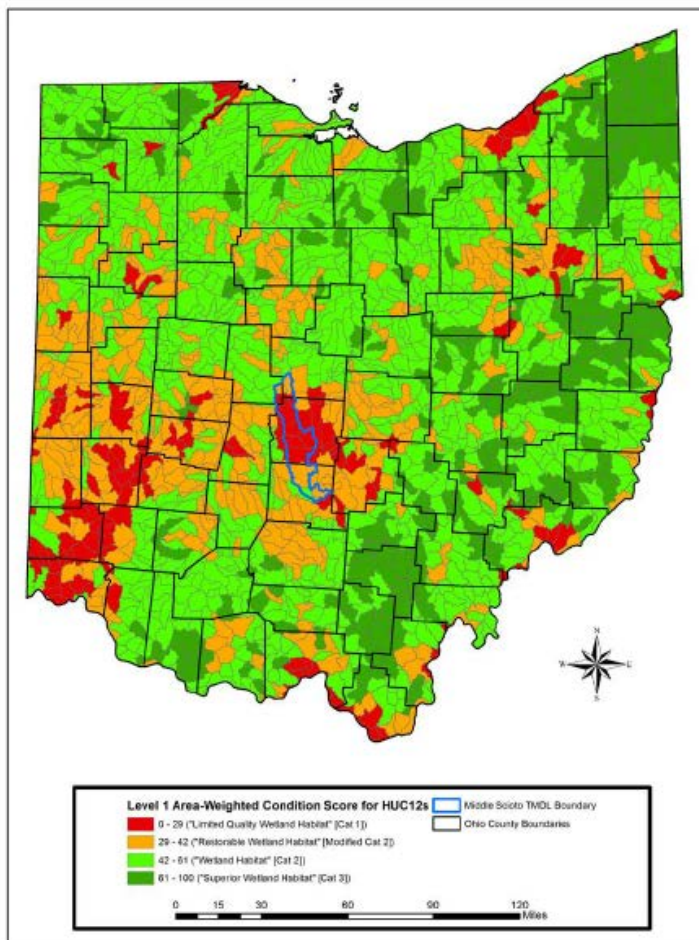
³ Impaired conditions for *Cryptosporidium* are based on water quality criteria that Ohio EPA intends to develop.

The water quality criteria are:

- 1) Nitrate 10 mg/L, directly corresponding to the Safe Drinking Water Act Maximum Contaminant Level (MCL);
- 2) Atrazine 3.0 µg/L;
- 3) *Cryptosporidium* water quality criteria are being developed, but if the annual average exceeds 1.0 oocysts/L the water is considered impaired. This value will likely be adopted as a water quality criterion before the next listing cycle; and
- 4) Algae: Cyanotoxins – two or more excursions above 1.0 µg/L of microcystin within the 5 year period.

As discussed above, this is the first listing cycle that includes assessments based on microcystin, which is the focus of Ohio's assessment out of four possible cyanotoxins; this is also the first listing cycle that showed exceedences of microcystin in drinking water intakes, leading to impairment listing of the WLEB shoreline for the PDWS use.

Figure 10. All HUC 12 watersheds in Ohio symbolized by area-weighted Level 1 wetland condition score for all NWI wetlands occurring within each watershed.



Inland lakes and reservoirs: All lakes in Ohio are currently designated as Exceptional Warmwater Habitat (EWH) for ALU; the designation is in the process of changing to Lake Habitat (LH). The revised designation will retain the current criteria and include nutrient water quality criteria. No biocriteria currently apply to lakes, only to rivers and streams. Numeric criteria that will protect aquatic life will apply to the lakes in future assessments. Assessment of Lake Habitat ALU will rely solely on water quality sampling (not biological monitoring). Future lake assessments will likely include Harmful Algal Blooms (HAB) and cyanotoxins. Ammonia, Chlorophyll a, dissolved oxygen, nitrogen, pH, phosphorus, Secchi disk and temperature are being proposed as parameters for LH criteria and are listed in Table I 3-1 below. Results of sampling at fourteen lakes are provided in Table I 3-2 of the 2014 IR. Results show eight lakes

with chlorophyll-a exceedences and five on the watch list. Twelve Lakes are included on the watch list for phosphorus, nitrates, and/or Secchi depth, and seven had exceedences of DO, pH and/or NH3. One lake had a copper exceedence.

Table I3-1. Proposed¹ lake habitat use criteria.

Note: All criteria are outside mixing zone averages unless specified differently.

Parameter Lake type	Form ²	Units ³	Statewide criteria	Ecoregional Criteria ⁴				
				ECBP	EOLP	HELP	IP	WAP
Ammonia	T	mg/l	Table 43-4	--	--	--	--	--
Chlorophyll a ⁵								
Dugout lakes	T	µg/l	6.0	--	--	--	--	--
Impoundments	T	µg/l	--	14.0	14.0	14.0	14.0	6.2
Natural lakes	T	µg/l	14.0	--	--	--	--	--
Upground reservoirs	T	µg/l	6.0	--	--	--	--	--
Dissolved oxygen ⁶								
All lake types	T	mg/l	5.0 OMZM 6.0 OMZA	--	--	--	--	--
Nitrogen ⁵								
Dugout lakes	T	µg/l	450	--	--	--	--	--
Impoundments	T	µg/l	--	930	740	930	688	350
Natural lakes	T	µg/l	638	--	--	--	--	--
Upground reservoirs	T	µg/l	1,225	--	--	--	--	--
pH								
All lake types	--	s.u.	A	--	--	--	--	--
Phosphorus ⁵								
Dugout lakes	T	µg/l	18	--	--	--	--	--
Impoundments	T	µg/l	--	34	34	34	34	14
Natural lakes	T	µg/l	34	--	--	--	--	--
Upground reservoirs	T	µg/l	18	--	--	--	--	--
Secchi disk transparency ⁷								
Dugout lakes	--	m	2.60	--	--	--	--	--
Impoundments	--	m	--	1.19	1.19	1.19	1.19	2.16
Natural lakes	--	m	1.19	--	--	--	--	--
Upground reservoirs	--	m	2.60	--	--	--	--	--
Temperature								
All lake types	--	--	B	--	--	--	--	--

¹ Proposed in draft water quality standards rules, August 2008.

² T = total.

³ m = meters; mg/l = milligrams per liter (parts per million); µg/l = micrograms per liter (parts per billion); s.u. = standard units.

⁴ ECBP stands for Eastern Corn Belt Plains; EOLP stands for Erie/Ontario Lake Plain; HELP stands for Huron/Erie Lake Plains; IP stands for Interior Plateau; and WAP stands for Western Allegheny Plateau.

⁵ These criteria apply as lake medians from May through October in the epilimnion of stratified lakes and throughout the water column in unstratified lakes.

⁶ For dissolved oxygen, OMZM means outside mixing zone minimum and OMZA means outside mixing zone minimum twenty-four-hour average. The dissolved oxygen criteria apply in the epilimnion of stratified lakes and throughout the water column in unstratified lakes.

⁷ These criteria apply as minimum values from May through October.

A pH is to be 6.5-9.0, with no change within that range attributable to human-induced conditions.

B At no time shall the water temperature exceed the average or maximum temperature that would occur if there were no temperature change attributable to human activities.

Removal of Waters from the 303(d) List

Section J of the 2014 IR describes the delisting of waters from the 2012 303(d) list. Ohio must demonstrate good cause for removal of waters from the list. Table J-5 below shows both delisting and listing of new waters. There are 282 delistings and 177 new listings, primarily in watershed assessment units. EPA concurs with the reasons for the changes because Ohio has demonstrated good cause, as discussed in the following sections.

Table J-5. Number of assessment units removed from or added to the 303(d) list.

	Number of Assessment Units			
	Watershed	Large River	Lake Erie	Total
Delistings (Remove from 303(d) list)				
Human Health (fish tissue)	90	0	0	90
Recreation	106	0	0	106
Aquatic Life	82	4	0	86
Public Drinking Water Supply	0	0	0	0
Total	278	4	0	282
New Listings (Add to 303(d) list)				
Human Health (fish tissue)	3	0	0	3
Recreation	136	6	0	142
Aquatic Life	24	0	0	24
Public Drinking Water Supply	6	1	1	8
Total	169	7	1	177

-Waters Meeting Water Quality Standards

The State's decision not to include certain AUs on its 2014 Section 303(d) list, also shown in Section J and Table J-6 below, is consistent with EPA regulations at 40 CFR 130.7(b)(6)(iv). Under 40 CFR 130.7(b)(6)(iv), States must demonstrate good cause for delisting. These causes were individually identified on the State's 2014 Section 303(d) list, due to: 1) methodology change using different AU size; 2) change in algal assessment methodology; 3) a flaw in original listing; 4) new data (meeting water quality standards); or 5) TMDL approval, as shown in Tables J-7, J-8, J-9 and J-10, respectively. The tables are incorporated into this document by reference.

Table J-6. Summary of reasons for changes to the 2014 303(d) list.

Reason for Change	Number of Assessment Units	
	Removals	Additions
Change in methodology (2010 AU size)	4	0
Change in methodology (algae)	0	7
Flaw in original listing	84	0
New data	62	170
TMDL approved	132	--
Total	282	177

-Waters Removed Based on TMDL Approval

The State's decision not to include certain AUs on its 2014 Section 303(d) list is consistent with EPA regulations at 40 CFR 130.7(b)(6)(iv). Under 40 CFR 130.7(b)(6)(iv), States are not required to list waters if all impairments are addressed in an approved TMDL. These waters were identified on the State's 2014 Section 303(d) list in Section J, Table J-10, with a change from Category 5 (the list) to Category 4A (approved TMDL). Table J-10 provides the designated uses, AU numbers and names of the waters. Table J-6 above summarizes the changes in listing status and total changes based on reasons for the changes.

Waters Subject to Other Pollution Control Requirements Stringent Enough to Implement any Water Quality Standards, 40 CFR 130.7(b)(1)(iii)

Under 40 CFR 130.7(b)(1), States are required to list WQLSs still requiring TMDLs where effluent limitations required by the CWA, more stringent effluent limitations required by State, local, or federal authority, or other pollution control requirements required by state, local, or federal authority, are not stringent enough to implement any applicable water quality standards. The regulation does not specify the time frame in which these various requirements must implement applicable water quality standards to support a State's decision not to list particular waters.

Monitoring should be scheduled for these waters to verify that the water quality standard is attained as expected in a reasonable time frame. Where standards will not be attained through implementation of the requirements listed in 40 CFR 130.7(b)(1) in a reasonable time, it is appropriate for the water to be listed on the Section 303(d) list to ensure that implementation of the required controls and progress towards compliance with applicable standards is tracked. If it is determined that the water is, in fact, meeting applicable standards when the next Section 303(d) list is developed, it would be appropriate for the State to remove the water from the list at that time.

Section L6 of the 2014 IR describes several projects addressing impairments and achieving water quality standards without a TMDL, classified as category 4B: "impaired, other required control measures will result in attainment of use." Ohio EPA indicates in Section L 6.2 of the IR that there are 4B demonstration locations within TMDLs, showing improvement toward full attainment status, that will be monitored for potential removal from the list in the next listing cycle (see table below).

Name of Watershed	Location of 4B in Report	Date of TMDL Approval	Locations of Updates in 2014 IR
Salt Creek Watershed (Scioto River basin)	Appendix D	8/12/2009	6.1.1.2
White Oak Creek Watershed	Appendix H	2/25/2010	6.2.1.2
Twin Creek Watershed	Appendix B	3/4/2010	6.2.2.2
Walnut Creek Watershed	Appendix B	5/4/2010	6.2.3.2
Great Miami River (upper) Watershed	Appendix E	3/26/2012	6.3.1.1

The State has demonstrated that there are other pollution control requirements required by State, local or federal authority that will result in attainment of water quality standards within a reasonable time.

Public Participation and Comments on Listing Decisions

The State's public participation process for the 2014 Integrated Report has been extensive. On May 23, 2013, Ohio EPA sent a mailing to all Level 3 qualified data collectors, including major NPDES discharge permit holders. A call for Level 3 Credible Data as posted on a web page is shown in Section D 5.1.1. Details of Level 3 Qualified Data Collector requirements are described in OAC Rule 3745-4-03(A)(4). Qualifications include a minimum of two years of practical experience in the following assessment categories: stream habitat assessment, fish community biology, benthic macroinvertebrate biology and/or chemical water quality assessment. (See Section D3, Table D-3, hereby incorporated by reference, listing the entities, data dates and data descriptions in the 2014 IR). On January 29, 2014, the State posted an announcement of its draft of the 2014 Integrated Report available on its public website (Section D 5.3 of the 2014 IR), including instructions for printed copy requests. The formal comment period for the 2014 Integrated Report was from January 29, 2014 to close of business on February 28, 2014. The Notice is included in the 2014 Integrated Report in Section D 5.3. Public comments received and Ohio EPA's responses are included in Section D 6; responses to EPA comments were addressed and incorporated into the 2014 Integrated Report.

During the public comment period the State received many comments that expressed concerns about several topics, including the four uses evaluated for listing, wetlands, harmful algal blooms, and proposed listing for Lake Erie. The State responded to all of the public comments and addressed its decision to not list certain waters on its 2014 Section 303(d) list. EPA has reviewed Ohio EPA's responses, and finds them to reasonably respond to the comments. As discussed in Sections D and H above, however, EPA is deferring its decisions regarding Ohio EPA's decision to not list the waters beyond the shoreline AU of the WLEB for PDWS impairment.

Priority Ranking and Targeting

EPA also reviewed the State's priority ranking of listed waters for TMDL development, and concludes that the State properly took into account the severity of pollution and the uses to be made of such waters, as well as other relevant factors such as status of recreation use, and the status of aquatic life. For near shore watershed areas of Lake Erie the waterbodies were assigned the same priority as the surrounding contiguous watersheds. Ohio defers to the EPA for prioritization of open waters of Lake Erie and to ORSANCO for the Ohio River. These waterbodies have low priority ranking for Ohio EPA initiated action, although many actions funded by EPA have been initiated and are underway in the Ohio River and in contributing watersheds to Lake Erie.

For the remaining waters in Category 5 of the Integrated Report, the State used a point system to determine the priority ranking of the AUs. Ohio EPA's point system is based on a maximum of 20 possible points (1 being the lowest priority and 20 being the highest priority, including categories of assigned points and extra points). The points were distributed as follows, and can be found in Section J 2 and Table J-3 of the 2014 Integrated Report, as shown below.

Table J-3. Priority points for impaired assessment units.

Points		Condition	# Assessment Units	
			WAUs	LRAUs
Human Health Use impairment (fish tissue contaminants) (maximum of 3 points)				
2	Listed as impaired for Fish Contaminants (Human Health Use)		421	35
+ 1	Additional point in assessment units that have greater than 500 parts per billion PCBs or mercury		3	5
Recreation Use impairment (maximum of 6 points)				
1	Listed as impaired, with assessment unit score ¹ between 0 and 25		45	0
2	Listed as impaired, with assessment unit score ¹ between 75.1 and 100		75	13
3	Listed as impaired, with assessment unit score ¹ between 25.1 and 50		156	2
4	Listed as impaired, with assessment unit score ¹ between 50.1 and 75		185	6
+ 2	Additional points if assessment unit contains Class A waters		53	21
Aquatic Life Use impairment (maximum of 4 points)				
1	Listed as impaired, with assessment unit score ¹ between 0 and 25		218	1
2	Listed as impaired, with assessment unit score ¹ between 75.1 and 100		17	10
3	Listed as impaired, with assessment unit score ¹ between 25.1 and 50		128	1
4	Listed as impaired, with assessment unit score ¹ between 50.1 and 75		126	2
Public Drinking Water Use impairment (maximum of 7 points)				
5	Listed as impaired for Public Drinking Water Use for one indicator		10	3
+ 2	Additional points in assessment units impaired for second indicator		2	3
1	Not listed as impaired, but on watch list: one point for each indicator		32	4

¹ The assessment unit score is reported on the summary sheets in Section L and on the assessment unit summaries on the web.

In addition, EPA reviewed the State's identification of WQLSs targeted for TMDL development in the next two years, and concludes that the targeted waters are appropriate for TMDL development in this time frame. Ohio considered various factors in developing both the long term and short term schedule.

Ohio builds on programmatic strengths in monitoring, modeling, permitting, and nonpoint source incentives to develop an integrated approach to TMDLs that aligns program goals and resources efficiently. Ohio also has an active stakeholder process for developing TMDLs. Ohio works on collecting data through the five-year rotating basin plans. Ohio's ALU data are valid for up to ten years for evaluating assessment units, so each AU must be monitored at least once every ten years. Each AU is assigned to one of the subsequent monitoring cycles using the following criteria: Ohio EPA's five-year Basin Monitoring Strategy; time since most recent assessment; distribution of work effort among Ohio EPA district offices; priority ranking; and TMDL schedule. Ohio has generated its long-term TMDL schedule based on local interest, funding and partnership potential. Some flexibility remains in long-term scheduling because it is difficult to predict these variables.

Table J-16 in Section J of the 2014 Integrated Report is the short-term schedule for TMDL Development and is hereby incorporated by reference.

Long term schedule

EPA has received Ohio's long-term schedule for TMDL development for all waters on the State's Category 5 list of impaired waters. EPA has requested that states provide such schedules.⁴ Ohio has provided information for the long term schedule in Section J 5.2 of the 2014 IR. Ohio states that the five-year basin approach provides the foundation for most monitoring, and aquatic life use monitoring data up to ten years old are valid. However, due to decreased resources, cycling through the entire basin rotation would take about 15 to 20 years at current resource levels. Therefore, the AUs are assigned to one of the three cycles based on the five-year basin approach, the time since last assessment, workload distribution among OEPA district offices, priority ranking, and the TMDL schedule. EPA is not taking any action to approve or disapprove this schedule pursuant to Section 303(d).

⁴ See Memorandum from Robert Perciasepe, Assistant Administrator for Water, to Regional Administrators and Regional Water Division Directors, "New Policies for Developing and Implementing TMDLs", August 8, 1997.

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